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**DIRECT TESTIMONY OF**

**R. SCOTT PARKER**

**ON BEHALF OF**

**DOMINION ENERGY SOUTH CAROLINA, INC.**

**DOCKET NO. 2020-43-E**

**Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION.**

A. My name is R. Scott Parker. My business address is 601 Old Taylor Road, Mail Code J37, Cayce, South Carolina 29033. I am employed by Dominion Energy South Carolina, Inc. ("DESC" or "Company") where I am the Manager of Transmission Planning.

**Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND BUSINESS BACKGROUND.**

A. I graduated from Clemson University with a Bachelor of Science degree in Electrical Engineering and from the University of South Carolina with a Master's degree in Business Administration. I am a registered Professional Engineer in the State of South Carolina.

I began working for DESC in 1990 as an Assistant Engineer in Generation Planning. I was transferred to System Control Computer Support as an Associate Engineer in 1996 and then to Operations Planning as an Engineer in 2007. I was promoted to Senior Engineer in 2008 and charged with supervising

the Reliability Desk in the System Control Room. I was promoted to Manager of Operations Planning in 2012 and then moved to Manager of Transmission Planning in 2018.

**Q. ARE YOU A MEMBER OF ANY INDUSTRY COMMITTEES FOR SYSTEM RELIABILITY ASSESSMENT OR PLANNING?**

A. Yes, I am currently the representative for DESC on the Southeastern Reliability Corporation ("SERC") Engineering Committee and the Eastern Interconnection Planning Collaborative ("EIPC") Executive Committee. Additionally, I am a member of the Carolinas Transmission Coordination Agreement Power Flow Study Group. These committees are directly involved with assessing the current and future capabilities of the integrated transmission grid in North America, the Southeast, and the Carolinas.

In addition, I manage a group of engineers that are members of a variety of industry committees that also assess system reliability and planning across the southeast. Some of these groups include SERC Planning Long-term Working Group, SERC Planning Short-term Working Group, SERC Short-circuit Working Group, and NATF (North American Transmission Forum) Modeling and Practices Working Group. These engineers share current industry issues and practices with our department members and others in the Company.

1 Q. PLEASE SUMMARIZE YOUR DUTIES AS MANAGER OF  
2 TRANSMISSION PLANNING.

3 A. I am responsible for overseeing the planning and associated analyses of  
4 the DESC electric transmission system to ensure compliance with required  
5 transmission planning and operating standards and criteria, as discussed  
6 below, and to ensure the safety, reliability and adequacy of the internal DESC  
7 transmission system as well as our interconnection transmission facilities with  
8 neighboring utilities.

9  
10 Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.

11 A. The purpose of my testimony is to discuss the need and necessity for the  
12 construction of the Toolebeck – Aiken 230 kV Tie and Segments of the  
13 Graniteville #2 – Toolebeck 230 kV and Toolebeck – South Augusta 230 kV Tie  
14 (collectively, the “Lines”) and associated facilities in Aiken County, South  
15 Carolina.

16 The Toolebeck – Aiken 230 kV Tie is planned to run between DESC’s  
17 existing Toolebeck Switching Station in Aiken County, South Carolina, and the  
18 Interconnection Point with South Carolina Public Service Authority (“SCPSA”)  
19 approximately 0.7 miles east of SCPSA’s existing Aiken Substation in Aiken  
20 County, South Carolina, primarily along existing rights-of-way for  
21 approximately 7.2 miles. The Toolebeck – Aiken 230 kV Tie will share single  
22 pole, double circuit (“SPDC”) structures with an existing 115 kV line. Both

1 sides of the SPDC structures will be designed for 230 kV even though the  
2 existing 115 kV line will continue to operate at its existing voltage.

3 The existing Graniteville #2 – South Augusta 230 kV Tie that will  
4 connect the DESC and Southern Company electrical transmission systems will  
5 be folded into the Toolebeck Switching Station in Aiken County. The fold-in  
6 will run along 10.5 miles of existing right-of-way and approximately 0.1 miles  
7 of new right-of-way on SPDC structures from the Urquhart Junction, which is  
8 located approximately ten miles southwest of Aiken and six miles east of the  
9 Savannah River, to the Toolebeck Switching Station. Once the fold-in of the  
10 Graniteville #2 – South Augusta 230 kV Tie is complete, the two lines created  
11 by the fold-in will be renamed the Graniteville #2 – Toolebeck 230 kV and  
12 Toolebeck – South Augusta 230 kV Tie.

13 Associated facilities to be added to DESC's transmission system include  
14 the 230 kV side of the Toolebeck Switching Station, i.e., a bus and three 230  
15 kV line terminals and power circuit breakers. Upon completion of the  
16 upgrades, the Toolebeck Switching Station will be renamed the Toolebeck  
17 Transmission Substation.

18 An overview of the proposed new tie and fold-in line segments is shown on  
19 the map attached hereto as Exhibit No. \_\_ (RSP-1).

20

1   **Q.   WHAT CRITERIA DOES DESC USE TO DETERMINE WHEN NEW**  
2       **TRANSMISSION FACILITIES ARE NEEDED?**

3   **A.**       The Company uses criteria mandated by the North American Electric  
4       Reliability Council ("NERC") Transmission Planning Standards, including  
5       NERC Reliability Standard TPL-001-4. Under this Reliability Standard,  
6       DESC is required each year to conduct a Planning Assessment of its  
7       transmission system for various seasons: the next year, five years into the  
8       future, and six to ten years into the future. In addition, the DESC  
9       Transmission Planning department applied DESC's system-specific Long-  
10      Range Planning Criteria which supplement the NERC Transmission Planning  
11      Standards. The Long-Range Planning Criteria are transmission planning  
12      criteria that DESC has adopted in light of its system attributes and  
13      consistently applies in its long-range transmission modeling.

14           In accordance with these standards and criteria, the DESC  
15      Transmission System is designed so that nothing more serious than local load  
16      impacts will occur during certain contingencies and so that after appropriate  
17      switching and re-dispatching, all non-radial loads can again be served with  
18      reasonable voltages, and all facilities can again operate within acceptable  
19      operating limits. A sample of contingencies considered includes:

- 20      1.    Loss of any generator;
- 21      2.    Loss of any transmission circuit operating at a voltage level of 115 kV or
- 22           above;

3. Loss of any transmission transformer;
4. Loss of any electrical bus and associated facilities operating at a voltage level of 115 kV or above;
5. Loss of all 115 kV or above circuits on a common structure;
6. Loss of entire generating capacity in any one generating plant;
7. Loss of any generating unit simultaneously with the loss of a single transmission line;
8. Loss of all components associated with a transmission circuit breaker failure; and
9. Loss of any generator, transmission circuit, or transmission transformer, followed by manual system adjustments, followed by the loss of another generator, transmission circuit, or transmission transformer (i.e. N-1-1 analysis).

**Q. WHY ARE THE LINES AND ASSOCIATED FACILITIES NEEDED?**

A. Since 2015, solar generation from qualifying facilities (“QF”) on the DESC system has increased rapidly such that it is now imperative that the Company study scenarios in addition to the peak-load studies that have traditionally been the staple of transmission planning assessments. In the Aiken area alone, there are currently 348 MW of QF solar generation in operation today that were not in operation in 2015. Additional scenarios now studied by DESC include “shoulder” load and “day-time minimum” (“DTM”)

1 load periods. DTM refers to periods when solar generators on the DESC  
2 system are generating at their maximum output while more traditional  
3 resources are dispatched down to their minimum output or turned off  
4 altogether.

5 More recently, the in-service dates for Southern Company's Plant Vogtle  
6 Units 3 and 4 have come into sharper focus. These two new units represent an  
7 additional 2,200 megawatts of generation (over and above the existing 2,320  
8 megawatts of generation from the two existing Plant Vogtle units) less than  
9 one mile from the Savannah River and the Georgia-South Carolina border.  
10 DESC has a tie-line with Southern Company directly connected to the Plant  
11 Vogtle Substation and will soon have two additional tie-lines connected to  
12 Southern Company's system.

13 DESC Transmission Planning studies, performed for the shoulder and  
14 DTM scenarios mentioned above and including the output from Plant Vogtle  
15 Units 3 and 4 (in addition to the output from the two existing Plant Vogtle  
16 units), indicate that, without the 230 kV construction proposed in this docket,  
17 the occurrence of certain contingencies will result in significant electrical  
18 overloading on multiple DESC 115 kV and 230 kV lines in the Aiken area and  
19 on one of the transformers at the Cope Generating Station. This could occur  
20 as early as 2022 when both new units at Plant Vogtle are scheduled to be  
21 online. These overload conditions are exacerbated by solar generation being  
22 added to DESC's system from QFs, which are not dispatchable.

1           To prevent these future excessive loading conditions, and to distribute  
2 the flow of power more reliably and evenly into the DESC system, additional  
3 electrical transmission paths are necessary between DESC and SCPSA.

4           After studying multiple options within DESC, with SCPSA, and with  
5 Southern Company to decrease the power flow on these Aiken outlet lines,  
6 DESC and SCPSA have agreed to establish the Toolebeck – Aiken 230 kV Tie  
7 and another 115 kV tie line. The Toolebeck – Aiken 230 kV Tie provides a  
8 significant path for power to flow out of the congested Aiken area and alleviate  
9 loading on the existing Aiken area 115 kV lines currently built with low  
10 ampacity conductor and with structures nearing their end-of-life.

11           In addition to construction of the Toolebeck – Aiken 230 kV Tie, this  
12 solution involves expanding the existing Toolebeck Switching Station to add  
13 230 kV capability and folding the Graniteville #2 – South Augusta 230 kV Tie  
14 into the upgraded and renamed Toolebeck Transmission Substation. Not only  
15 will the new tie line decrease the power flow on the existing Aiken area  
16 electrical transmission outlet lines and more reliably and evenly distribute the  
17 flow of power into and around the DESC system, but the new tie line will also  
18 increase the transfer capacity for DESC's electrical transmission system to all  
19 interconnected utilities.  
20  
21



**Q. IN DETERMINING TO BUILD THE LINES, WHAT ALTERNATIVES DID DESC CONSIDER?**

**A.** To address overloading in the Aiken area, DESC Transmission Planning considered the following alternatives:

1. Rebuild the Canadys – SRS 230 kV line as a double circuit transmission line. This would require rebuilding approximately 57 miles of a 230 kV transmission line. The time needed to complete this project would exceed the timeframe allotted to address the Aiken area loading issues. Taking the line out of service to do this work would also put extreme stress on the operation of the DESC transmission system. The cost to perform this project would exceed \$100 million.
2. Rebuild the 230 kV lines along the VCS2 – Ward – Graniteville – Graniteville #2 corridor as a double circuit transmission line. This would require rebuilding approximately 62 miles of 230 kV transmission lines. Taking the lines out of service to do this work would put extreme stress on the operation of the DESC transmission system and was not a realistic option for that reason. It would accomplish the goal of reducing loading in the Aiken area, but the cost would exceed \$100 million, and take longer to complete than is needed to meet the target completion date.
3. Rebuild lines in Graniteville #2 – Toolebeck – Edenwood corridor to establish a 230 kV line between Graniteville #2 and Edenwood. This

alternative would solve the Aiken area loading issues, but would be difficult and costly to construct. A large portion of the right-of-way from Graniteville #2 – Toolebeck is too narrow to accommodate 230 kV construction and runs through commercial and residential areas. New right-of-way would also be needed. The cost to complete this project would also exceed \$100 million and could not be accomplished in the timeframe required.

4. Rebuild lines in the Urquhart – Edenwood corridor to establish a 230 kV line. This alternative was attractive because it would require little new right-of-way and most of the construction would be green field. It also solved the Aiken area issues completely. However, the time to construct was greater than allowed, and the cost again would exceed \$100 million.
5. Construct the Town Creek 230 kV Switching Station with a bus and three 230 kV line terminals and power circuit breakers near Urquhart Junction, establish the Stevens Creek – Briggs Road 115 kV Tie and Town Creek – Aiken 230 kV Tie with Santee Cooper and fold in the existing Graniteville #2 – South Augusta 230 kV Tie into the Town Creek Transmission Switching Station. This alternative creates two new outlets in the Aiken area. The 115 kV line creates a secondary path to offload the heavily loaded Steven Creek (DESC) – Thurmond (SEPA) 115 kV tie line. The new 230 kV line and fold-in takes a large amount of the power flowing into the DESC system and passes it to SCPSA's 230

1 kV system, thereby unloading the other Aiken area transmission lines.  
2 The site near Urquhart Junction necessary to construct the Town Creek  
3 Switching Station was highly contested by the nearby landowners.  
4 Because of this it would have taken longer to acquire the site than the  
5 timeframe required, so the Town Creek portion of this alternative was  
6 abandoned.

- 7 6. Establish the Stevens Creek – Briggs Road 115 kV Tie and Toolebeck –  
8 Aiken 230 kV Tie with Santee Cooper and fold-in the existing  
9 Graniteville #2 – South Augusta 230 kV Tie into the upgraded and  
10 renamed Toolebeck Transmission Substation. This alternative is  
11 effectively the same as alternative five except that the existing  
12 Toolebeck Switching Station is upgraded and renamed the Toolebeck  
13 230 kV Transmission Substation instead of constructing the Town Creek  
14 230 kV Switching Station. This alternative is relatively easy to  
15 construct given it can be accomplished on mostly existing rights-of-way  
16 and requires a minimal amount of transmission outages, done in phases.  
17 It is also cheaper than the other alternatives. Completing the 115 kV  
18 tie will solve loading issues DESC could experience once Plant Vogtle  
19 Unit 3 comes on-line, while the 230 kV line and fold-in can be completed  
20 the following year in time for Plant Vogtle Unit 4 commercial operation.  
21 This alternative is the preferred option and the one chosen by DESC to  
22 address overloading in the Aiken area.  
23

1 Q. PLEASE DESCRIBE THE PROCESS BY WHICH DESC SELECTED  
2 THE ROUTE FOR THE LINES.

3 A. DESC determined that the Lines could be built almost entirely within  
4 the existing rights-of-way. The following additional rights-of-way will be  
5 required:

- 6 1. Approximately 1.2 acres between two of the intersecting corridors  
7 at Urquhart Junction,
- 8 2. Approximately 3.2 acres adjacent to the upgraded and renamed  
9 Toolebeck Transmission Substation where the Toolebeck – Aiken  
10 230 kV Tie will leave the substation and merge with the existing  
11 transmission line corridor, and
- 12 3. Approximately 0.5 acres at the Interconnection Point with  
13 SCPSA.

14 The use of existing rights-of-way significantly minimizes potential for  
15 environmental, land use, cultural resource and scenic impacts and eliminates  
16 costs associated with the acquisition of new rights-of-way. Therefore, DESC  
17 did not consider alternate green field routes for the construction of the  
18 proposed Lines.

1 Q. WHAT IS THE ESTIMATED COST AND IN-SERVICE DATE OF THE  
2 PROPOSED LINES AND ASSOCIATED FACILITIES?

3 A. The total cost of construction for the proposed Lines and associated  
4 facilities is approximately \$27.1 million.

5 The Lines and associated facilities are scheduled to be completed by  
6 December 31, 2021.

7  
8 Q. DO THE PROPOSED LINES AND ASSOCIATED FACILITIES SERVE  
9 THE INTERESTS OF SYSTEM ECONOMY AND RELIABILITY?

10 A. Yes. The proposed facilities serve the interests of system economy and  
11 reliability. They represent the most cost-effective proposal considering system  
12 needs and constraints and the best long-term solution for the continued  
13 transmission of safe, reliable electric power to DESC's customers. The addition  
14 of the Lines and associated facilities will establish additional electrical paths  
15 between DESC and the SCPSA electrical transmission system, distributing the  
16 flow of power more reliably and evenly while preventing overloading on the  
17 DESC system and ensuring that DESC remains in compliance with both NERC  
18 Transmission Planning Reliability Standards and the Company's Long Range  
19 Planning Criteria.

1 **Q. IS THERE A REASONABLE ASSURANCE THAT THE LINES AND**  
2 **ASSOCIATED FACILITIES WILL CONFORM TO APPLICABLE**  
3 **STATE AND LOCAL LAWS AND REGULATIONS?**

4 **A.** Yes. DESC currently operates all its existing transmission facilities  
5 within the applicable state and local laws and regulations, and we are  
6 committed to operating the Lines and associated facilities within applicable  
7 state and local laws and regulations as well.

8  
9 **Q. DOES THE PUBLIC CONVENIENCE AND NECESSITY REQUIRE**  
10 **THE CONSTRUCTION OF THE LINES AND ASSOCIATED**  
11 **FACILITIES?**

12 **A.** Yes. The public convenience and necessity requires construction of the  
13 Lines and associated facilities. These new Lines and associated facilities are  
14 critical to the operational integrity of DESC's electric transmission system and  
15 are necessary to ensure that DESC remains in compliance with the NERC  
16 Transmission Planning Reliability Standards and the Company's own Long-  
17 Range Planning Criteria. Failure to construct the Lines and associated  
18 facilities could result in unacceptable thermal loading and System Operating  
19 Limit violations on the electric transmission system in the northern and  
20 central regions of DESC's electric service area when Southern Company's new  
21 generation facilities at Plant Vogtle come online. Accordingly, the new Lines  
22 and associated facilities serve the interests of system economy and reliability.

1   **Q.   WHAT ARE YOU ASKING THIS COMMISSION TO DO?**

2   A.           DESC respectfully asks that the Commission issue a Certificate of  
3           Environmental Compatibility and Public Convenience and Necessity for the  
4           construction and operation of the Toolebeck – Aiken 230 kV Tie and Segments  
5           of the Graniteville #2 – Toolebeck 230 kV and Toolebeck – South Augusta 230  
6           kV Tie and associated facilities.

7  
8   **Q.   DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

9   A.           Yes.

**Toolebeck - Aiken 230 kV Tie,  
Graniteville #2 - Toolebeck 230 kV,  
Toolebeck - South Augusta 230 kV Tie,  
and Associated Facilities**

Exhibit No. \_\_\_\_\_ (RSP-1)  
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★ Substation

Segments of the Graniteville #2 - Toolebeck 230 kV and Toolebeck - South Augusta 230 kV Tie (Fold-In)

Toolebeck - Aiken 230 kV Tie

0 4,000 8,000 16,000 24,000 Feet



DESC and SCPSA  
Interconnection Point

